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ABSTRACT

The feasiblity of an observational rating scale which would provide objective, reliable and quantifiable measures of social and affective behavior was investigated. The Observation of Socialization Behavior (OSB), focusing on peer-group behavior of pre-school children and designed for use in unstructured situations was developed. Two forms of the instrument, one for use with videotaped interaction sessions, and the other for live classroom situations, were developed. A combination time-and event-sampling procedure was used and behavioral events were recorded at twenty-second intervals. Observers were trained by videotaped interaction segments, and computation of observer reliability is explained. Investigations provide favorable indications of the validity of the instrument for measuring peer-group behavior of pre-school children. It is concluded that the instrument is useful, flexible, and applicable to early childhood psychometry. (LR)

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DEVELOPMENT OF AN OBSERVATIONAL RATING SCHEDULE FOR PRESCHOOL CHILDREN'S PEER-GROUP BEHAVIOR*

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Introduction

The need for developing objective, reliable, and valid measures of social and affective behavior is especially critical at the preschool level. The shortage of appropriate instruments meeting these criteria became evident in the search for measures to be used in a study of differential socialization patterns of preschool children which is currently being conducted at the Michigan State University Institute for Family and Child Research. Consideration of the needs for such instrumentation suggested the potential usefulness of a systematic observational rating procedure.

The unique demands of studying young children have traditionally suggested the use of direct observation. Wright, a pioneer in observational child study, has suggested that observational methods are ultimately the simplest way of studying child behavior. Two primary methodological advantages of observation are that neither planned arrangements nor appreciable time stands between the observer and his target phenomena (Wright, 1960).

A distinct disadvantage of many methodological procedures, including most observational methods, is their limitation to either quantitative or qualitative measures. Ideally, both should be included, with the additional requirement that the context of the indicated quantitative measures be retained for purposes of analysis.

A critical concern for developmental studies and therefore of particular importance for early childhood measures is comparability over extended periods of time. This need is best satisfied by procedures which

are systematic and which impose both structure and objectivity on the observer, thus guaranteeing maximum comparability whether one or several observers are used during the course of a study.

Finally, a system should readily lend itself to quantitative analysis without losing its qualitative dimensions, particularly those relating to sequences of events and context of activities. At the same time, the multidimensionality which is a desirable aspect of complex behavioral observations should not stand in the way of straightforward analysis of any given dimension.

Since an observational rating schedule would appear to fulfill these various criteria, the feasibility of using such a procedure was investigated. The Observation of Socialization Behavior (OSB), focusing specifically on peer-group interaction behavior of preschool children, was developed for this purpose.

Methods and Techniques

Instrument Description

Two forms of the OSB were devised. Form 1 is designed for use with videotaped interaction situations, while a slightly abbreviated version, Form 2, is intended primarily for use with live classroom observations. Both forms are designed for rating unstructured (free-play) situations.

Factors of particular interest are quantity and quality of verbal and nonverbal communication, individual and group interaction, involvement, and situational tone. In order to measure these factors, ten multidimensional scales were devised. An attempt was made to insure that these scales were objective descriptions of behavior rather than subjective judgments

with individual interpretations. However, two factors (motivation and general situational tone) appeared to be inherently incapable of being determined with complete objectivity. Therefore, the ten scales retained for the instrument include eight based on observed behaviors and two based on some degree of situational inference.

The ten scales included in Form 1 are Emotional Tone, Social Behavior, Involvement (nature of activity and intensity), Verbalization, Physical Behavior, Play Context, Peer Interaction, Group Interaction, Adult Interaction, and Inferred Motivation. Form 2 includes all but Emotional Tone, Physical Behavior, and Play Context.

Methodological Procedures and Format

The OSB uses a combination time- and event-sampling procedure, an approach which has several methodological advantages. The observed events are natural situations and thus possess an inherent validity not ordinarily gained in pure time sampling. Important behavioral events are captured although they may occur at very infrequent intervals, while the systematic sample of behavior recorded can be reasonably assumed to be representative. Finally, a continuity of behavior is obtained by this procedure which is important to the particular variables under consideration (Kerlinger, 1964).

An observation interval of twenty seconds was selected for the OSB. This interval was chosen because it is short enough to include a reasonable recordable unit of behavior, yet long enough to observe and record a meaningful unit. Delineation of intervals for videotape rating is facilitated by attaching an automatic signal tone to the videotape unit for recording purposes.

During each twenty-second interval, any occurrence of a particular behavior is recorded, but multiple occurrences are not noted. Allowance is made for recording up to two different categories which may occur for three of the scales (Verbalization, Involvement, and Inferred Motivation). On all others, the single category best characterizing that point in time is noted. The format for a frame (representing a single interval) is shown in Figure 1. In addition, sample rating sheets for both forms are attached.

Both forms must contain a code for each interval in each code position. If no specific code is applicable, an "X" is coded in that position. A horizontal line may be used for Peer, Group, and Adult Interaction code positions for which nothing is applicable. This use of a specific designation rather than leaving spaces blank if no specific code is applicable is important as a means of obtaining the most complete and reliable data possible. Thus, it is not possible for an observer to overlook a behavior which should be recorded because of misinterpretation of a space in which no code appears.

Emotional Tone, Social Behavior, Play Context, and Involvement Code #1 must each be a code other than "X" for each interval. All other code positions may contain either a specific alpha-numeric code or an "X" ("not applicable"), depending on the particular situation occurring during that interval. The only exception to this rule is the rare case in which a child being observed leaves the scene so that it is impossible for the observer to follow (primarily in videotaped observations). In such cases, X's are coded for all sections.

Each interval is rated as an individual unit. Therefore, the child's behavior at a previous time does not influence the ratings made for any

Emotional Tone Code			Verbal Code #1	Verbal Code #2	
Social Behavior Code			Physical Behavior Code	Play Context Code	
		Inferred Motivation Code #1 Inferred Motivation Code #2			
Involvement Code #1	Peer Interaction Code #1	Peer Interaction Code #2	Peer Interaction Code #3	Group Interaction Code	Adult Interaction Code
Involvement Code #2					

Form 1

Social Behavior Code		Verbal Code #1	Verbal Code #2
Involvement Code #1	Inferred Motivation Code #1 Inferred Motivation Code #2		
Involvement Code #2	Peer Interaction Code	Group Interaction Code	Adult Interaction Code

Form 2

Fig. 1. Format for rating frames: Observation of Socialization Behavior.

subsequent interval except insofar as the context of a preceding interval must be considered for adequate interpretation of a unit of behavior. The observer's frame of reference is described as external to the process. That is, each event is viewed in terms of its theoretical properties from the "generalized other" perspective defined by Bales (1951). The time reference, of course, is limited to the immediate context.

In recording observations, either one or more independent observers may be used. If more than one observer is used, concurrent observations are made of different children. When only one observation per child is made, the group is randomly divided among observers. When multiple observations of a child are made, these are equally divided among the observers. Order of observation of the children in a given situation is randomly determined.

For videotape rating using Form 1 of the OSB, several viewings of each tape are necessary for completing the ratings. One rater should always be used to complete all the ratings for each child. This is important for gaining the most accurate and complete information with maximum efficiency in the complex situation presented.

Rater Training Procedures

Initial training of observers in the use of the OSB is accomplished with the aid of videotaped interaction segments. The training program includes extensive practice in use of the rating schedule, clarification of variable categories and rating procedures through group discussion, and resolution of discrepancies among observers.

Following a minimum of one week's practice with the OSB, observer reliability is determined with the use of videotapes not previously viewed by that observer. When possible, reliability is established concurrently with more than one other observer. This guards against the possibility of gradual shifts in interpretation over time, an event which would tend to increase discrepancies in the long run even though amount of disagreement at any given time would be within the limits of tolerated error. After reliability is established, each observer devotes several days to additional practice with the OSB before collection of data in a live observational setting is attempted.

Continued quality control of rating is maintained by two procedures. Written quizzes are given to all raters periodically, and regular checks are made of intra- and interobserver reliability. Occasional group discussion sessions are also held with all raters working together in order to clarify unusual situations which may have been encountered.

Usability

Reliability

Interobserver reliability is established by two independent observers simultaneously recording the behaviors of the same child in the same intervals on their respective recording forms. Intraobserver reliability is established by a single observer rerating a previously observed tape. Intervals between these ratings have varied between one week and six months.

Two methods of computing reliability are used, one based on total blanks and the other based on total recorded positions. Each type of

reliability is computed for the entire instrument and also for each separate scale. Minimum suggested reliability indices are given in Table 1. These minimum reliability rates must be attained conjointly for each observer on at least two observations of twelve consecutive minutes each. Reliability must be established separately for each form.

For each method, points for determining total-instrument reliability are assigned to each variable category position as shown in Figure 2. Total points obtained are computed for each complete observation. An index of percentage reliability is derived by dividing agreements (number of points) in each case by the total possible points for that method.

Computation of observer reliability by the first procedure (total blanks) credits the observers with agreements for those instances on which they agree that no recordable behavior occurred (i.e., both recorded an "X" for that category of that interval). Formulas used for figuring total-instrument reliability by this method are as follows:

Form 1:

$$\% \text{ reliability} = \frac{\text{Agreements (Number of points)}}{\text{Number of frames} \times 13}$$

Form 2:

$$\% \text{ reliability} = \frac{\text{Agreements (Number of points)}}{\text{Number of frames} \times 9}$$

Individual scale reliability is figured as follows:

Both forms:

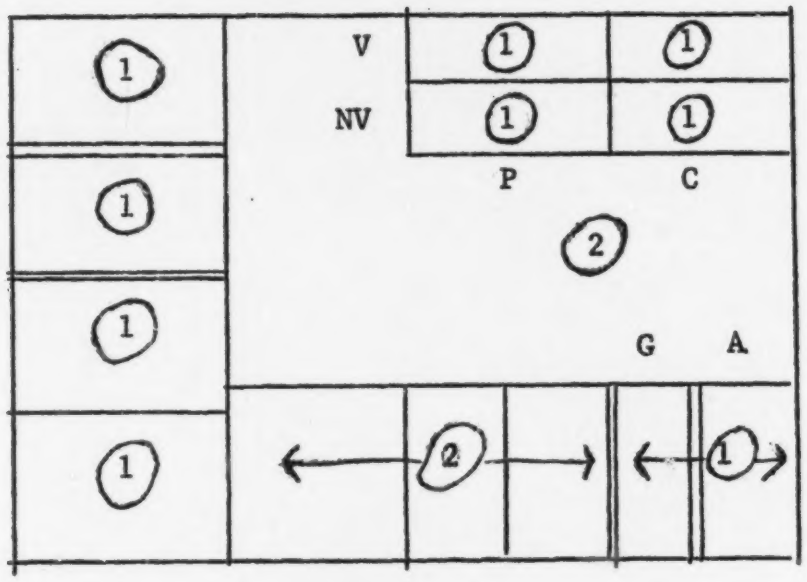
$$\% \text{ reliability} = \frac{\text{Agreements (Number of frames)}}{\text{Number of intervals in total observation}}$$

Computation of observer reliability by the second method (total recorded positions) considers only those positions in which one or both observers record something other than "X." The formula for figuring

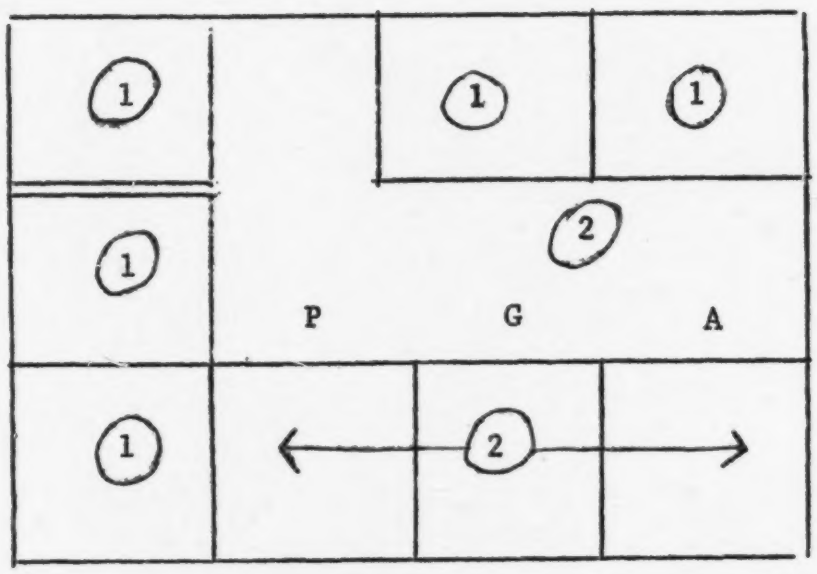
TABLE 1

Minimum Suggested OSB Rater Reliability Indices

		Inter-Rater Reliability	Intra-Rater Reliability
Total Blanks	Entire Instrument	.85	.90
	Individual Categories	.80	.85
Total Recorded Positions	Entire Instrument	.65	.75
	Individual Categories	.60	.70



Form 1



Form 2

Fig. 2. Assignment of points for OSB rater reliability.

total-instrument reliability by this method is as follows:

Both forms:

$$\% \text{ reliability} = \frac{\text{Agreements (Number of points)}}{\text{Agreements plus disagreements (Number of points possible for positions in which either observer recorded any code)}}$$

Individual scale reliability is figured as follows:

Both forms:

$$\% \text{ reliability} = \frac{\text{Agreements (Number of frames)}}{\text{Number of intervals in total observation}}$$

Validity

No validity indices for the OSB are available at this time. However, several approaches to the assessment of this psychometric consideration have been used to provide support for a satisfactory indication of instrument validity.

First, a measure of content validity was achieved. Construction of the OSB was based on theoretical contributions of social and developmental psychology, and preliminary testing of the procedure was conducted in a field setting throughout the early stages of its development.

Another factor by which the validity of the OSB may be indicated is the use of scales from previously validated instruments. The Social Behavior scale actually consists of the set of categories developed by Parten (1932). Similarly, Bales' (1951) Interaction Process Analysis provided the basis for the Verbalization scale. Since both these scales have been widely used over a period of years and validity has been established for each, these aspects of the OSB have an additional measure of validity.

Finally, concurrent validity measures have been obtained with both teacher rating scales and observational checklists. Additional instrument evaluation procedures, including factorial analysis, are also planned, but the investigations performed thus far provide favorable indications of the validity of the OSB for the measurement of the peer-group behavior of preschool children.

Analysis

Since the OSB covers a relatively wide range of behaviors, several different approaches to analysis are possible. Both individual and group scores can be obtained on either an absolute or a ratio scale. The scores to be used in any case are determined by the objectives or hypotheses of that study.

From the ten multidimensional OSB scales, over two hundred different indices have been derived for use, and at least this many more are possible but have not yet been derived. To facilitate analysis, a computer program has been prepared which summarizes the data and computes these indices for the individual or group and the time period (in the case of repeated observations) specified by the user. Simple frequencies may also be printed if desired.

Examples of the types of questions for which indices have been derived are:

Type	Example
1. Proportion of time for general behavior	1. What proportion of the time does the S engage in verbalization?
2. Proportion of time for dimension of behavior	2. What proportion of the time does the S engage in asking questions?

Type	Example
3. Proportion of general behavior for dimension of behavior.	3. What proportion of the S's verbalization is the asking of questions?
4. Proportion of time for specific behavior	4. What proportion of the time does the S ask information-seeking questions?
5. Relative proportion of time for specific behavior	5. What proportion of the S's verbalization is for questions which are information-seeking?
6. Relative proportion of dimension of behavior for specific behavior	6. Of all questions asked by the S, what proportion are information-seeking?
7. Proportion of time for general behavior in specific context	7. What proportion of the time that the S is engaged in cooperative play does he engage in verbalization?
8. Proportion of time for dimension of behavior in specific context	8. What proportion of the time that the S is engaged in cooperative play does he ask questions?
9. Proportion of time for specific behavior in specific context	9. What proportion of the time that the S is engaged in cooperative play does he ask information-seeking questions?
10. Relative proportion of dimension of behavior for specific behavior in specific context	10. What proportion of the questions asked by the S while he is engaged in cooperative play are information-seeking?

Any one of the questions might, of course, be asked in terms of a specified group rather than an individual subject.

Applicability

The development and preliminary use of the OSB has involved subjects from ten classes in two different preschools over a two-year period. These subjects have ranged in age from 2 1/2 to 5 1/2 years. Socioeconomic level has ranged from lower to upper-middle class, and a variety of cultural and subcultural groups have been represented. Although all of the groups for

which the OSB has been used thus far are regular classes, use is presently being extended to subjects in a therapeutic preschool class.

OSB data using the forms described above have been used in several studies. In addition, another study employed a slight modification in the form which involved the addition of codes for specific play materials. In each case, the procedure has appeared to be equally appropriate for the diverse groups represented.

In summary, the data obtained thus far with the OSB indicate the usefulness of this particular instrument, including flexibility which suggests an even broader application. This evidence is interpreted as support for the feasibility of such structured observational rating procedures for early childhood psychometry.

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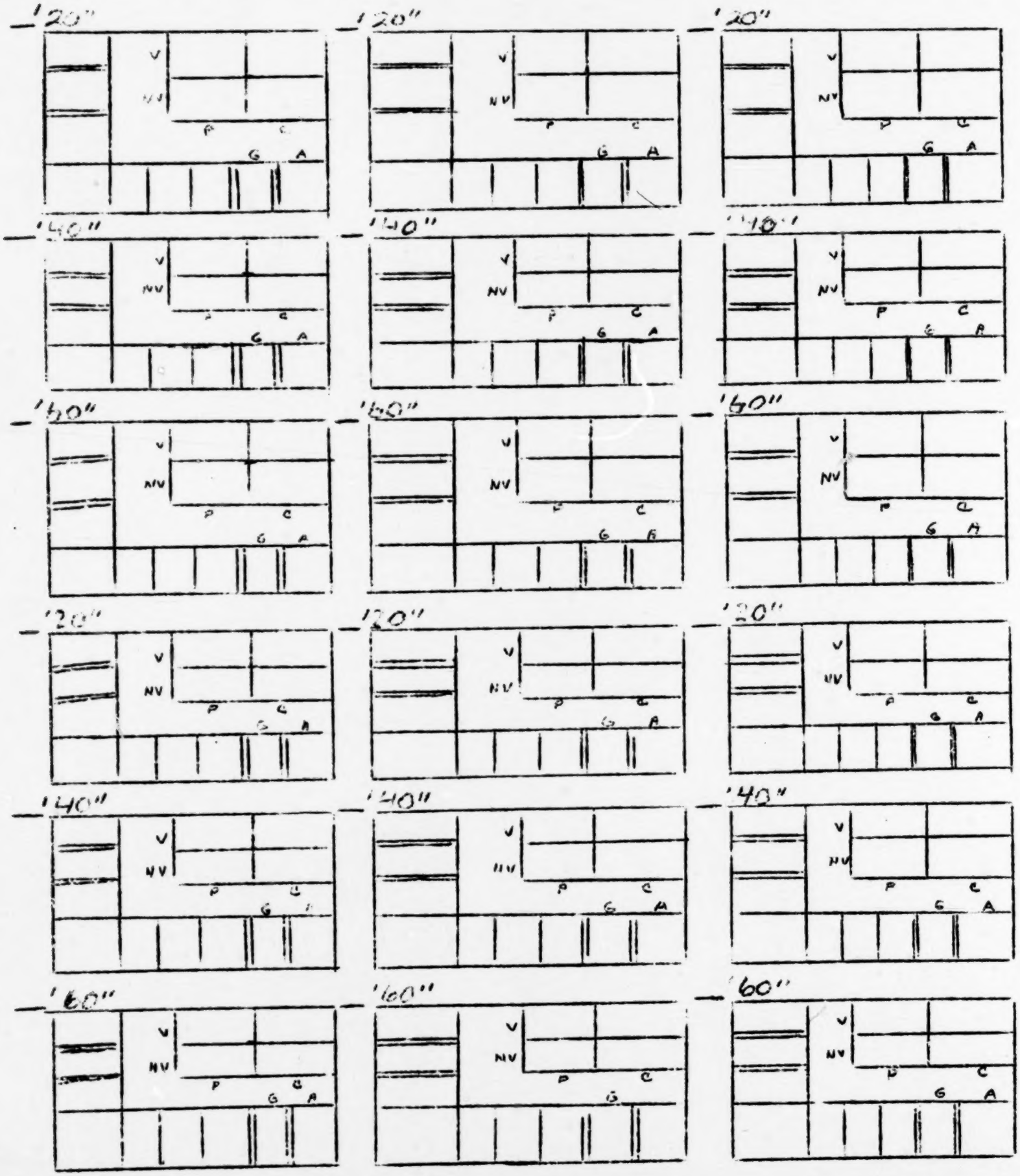
RATING FORMS

OBSERVATION OF SOCIALIZATION BEHAVIOR
Rating Form #1

Subject _____
Subject ID _____
Peer Code of Subject _____
Class _____

Observer _____
Date _____
Grouping _____
Situation _____
Number of Children _____



OBSERVATION OF SOCIALIZATION BEHAVIOR
Rating Form #2

Subject _____
Subject ID _____
Peer Code of Subject _____
Class _____

Observer _____
Date _____
Grouping _____
Situation _____
Number of Children _____